
Space Weather Forecast

Issued on Friday, 26 January 2024 at 01:16 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: CME (Coronal Mass Ejection) likely today, with Minor Geomagnetic storms likely and a chance of Moderate geomagnetic storms. Chance of Moderate solar activity.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low with only Common class flares, the largest from a region in the northwest. There are currently five sunspots on the visible disc, all in the western hemisphere, with two moderately sized regions, one of which is potentially magnetically complex, although analysis of the region is becoming harder as it approaches the southwest limb. The other moderately sized region was previously magnetically complex but has recently simplified a little. The remaining spot regions are small and simple.

There have been several Coronal Mass Ejections (CMEs) emerge in the last 24 hours, none of which are thought likely to be Earth directed.

Solar Wind / Geomagnetic Activity: Solar winds showed weak CME arrivals during the morning and afternoon. Wind speeds were mostly between 380-460 km/s, peaking at 496 km/s at 25/0614 UTC. The strength of the solar winds magnetic field strength was predominantly weak, but temporarily increased through the afternoon to reach moderate levels. The important north-south component of the solar wind fluctuated weakly. Geomagnetic activity was Quiet throughout.

Energetic Particles / Solar Radiation: Solar radiation was at background levels.

Four-Day Space Weather Forecast Summary

Solar Activity: Activity has declined over the past few days, but is expected to be Low to Moderate with a chance of isolated Moderate flares and a slight chance of a Strong flare.

Solar Wind / Geomagnetic Activity: There is potential for at least three CME glancing blows through the forecast period. In addition, these CMEs are all expected at a similar time - early today (26 Jan), with the potential for them to either combine or arrive one after the other, perhaps increasing any geomagnetic effects.

Overall, geomagnetic activity is expected to be mostly Quiet to Unsettled initially, with an increase expected today, perhaps step-wise if the various CMEs arrive separately, with Active to Minor Storms likely and a chance of Moderate Storms. There is a slight chance of Strong Storms, should the CMEs combine favourably for this to occur. Geomagnetic activity should then gradually return to Quiet levels by Day 3 (28 Jan) after any residual CME effects have waned. During day 4 (29th) an enhanced solar wind is expected to arrive, and geomagnetic activity is expected to increase to Unsettled to Active levels, with a slight chance of a Minor Storm.

Energetic Particles / Solar Radiation: There is a slight chance of S1/Minor radiation storms through the period due to the two complex regions on the disc.

Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	70	20	1	10
Strong	G3	No	15	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	No	45	45	45	45
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	10	10	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm⁻²sr⁻¹s⁻¹)